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## TENSE FROM TOUCH

### Tense from Touch: Examining Accidental Interpersonal Touch between Consumers

Brett A. S. Martin (contact author)  
Professor of marketing  
QUT Business School  
Queensland University of Technology  
2 George Street  
Brisbane QLD 4000  
Australia  
Email: [brett.martin@qut.edu.au](mailto:brett.martin@qut.edu.au)  
Tel: +61 7 31387739

and

Peter Nuttall  
Associate professor of marketing  
University of Bath  
School of Management  
Claverton Down  
Bath BA2 7AY  
UK  
E-mail: [p.nuttall@bath.ac.uk](mailto:p.nuttall@bath.ac.uk)  
Tel: +44 1225 386726

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### Tense from Touch: Examining Accidental Interpersonal Touch between Consumers

#### Abstract

Retail shopping research recognizes that other consumers in a store can impact a consumer's experience. However, the effects of accidental interpersonal touch (AIT) are only beginning to emerge in the literature. The current research presents three field experiments to illuminate the process that drives AIT effects. This research is the first to show that AIT effects are driven by arousal; specifically tense arousal rather than energetic arousal. The findings build on prior research to investigate moderators of the AIT effect – trait anxiety and social visibility. The findings show that AIT effects are amplified for anxious female consumers and situations where store bystanders activate feelings of embarrassment. Theoretical and managerial implications are offered.

*Keywords:* Retailing; Accidental interpersonal touch; Tense arousal; Energetic arousal; Consumer emotion; Field experiments.

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Retail research highlights that a consumer's experience in a store can be influenced by other consumers (Dahl, Argo, & Morales, 2012). However an overlooked area of research is where consumers in a store accidentally touch each other. Prior research has almost exclusively focused on *intentional* interpersonal touch, usually where a front-line employee touches a consumer, such as a pat on the shoulder. Intentional touch has shown positive effects such as longer shopping time (Hornik, 1992). Yet not all touch is intentional or viewed positively. Prior observational research shows that consumers can experience accidental interpersonal touch (AIT) from strangers (Aranguren & Tonnelat, 2014; Brown, 2006; Underhill, 1999). Further, Martin (2012) found that AIT between consumers results in negative effects on brand evaluation. Touched consumers viewed brands they were examining negatively and left the store earlier. Studies of observational shopping behavior suggest that AIT makes consumers leave a store (Underhill, 1999). What drives consumers to leave a store after being accidentally touched by another consumer? What role, if any, do other consumers who are bystanders play? To shed light on these questions, the current studies examine the process that drives AIT effects.

This research offers contributions to the literature. First, the authors are the first to show the mechanism that underlies AIT effects by demonstrating how tense arousal (studies 1 to 3) and embarrassment (study 3) mediate the results. Second, the research extends work which has shown a main effect for AIT (Martin, 2012) by revealing two moderators that influence results. These moderators reflect an individual difference between consumers (trait anxiety) and differences in the shopping environment (social visibility from fellow shoppers) respectively. Figure 1 provides an overview of the research. Third, the authors build on prior work by showing the robustness of the AIT effect across different areas of the body being touched, a different dependent variable and different products.

(Insert Figure 1 about here)

Note. Tense arousal and energetic arousal comprise Thayer's (1989) two factor model of arousal. The present research predicts tense arousal but not energetic arousal has an effect on the dependent variables.

### **BACKGROUND**

#### **Touch**

AIT research has been neglected in the past. Studies have examined consumer perceptions of products they touch (Chylinksi, Northey, & Ngo, 2015; Krishna & Morrin, 2008; Peck & Shu, 2009), products touched by other consumers (Argo, Dahl, & Morales, 2006), or the trait, need for touch (Peck & Childers, 2003). Research has also focused on intentional touch as opposed to accidental touch (Fisher, Rytting, & Heslin, 1976; Whitcher & Fisher, 1979), suggesting, for example, that shoppers who are touched on the arm by an employee as they enter a store spend more time shopping. In contrast, Martin (2012) examined AIT between consumers with no verbal interaction. The author manipulated AIT by having an in-store confederate brush their arm against a consumer's shoulder blade. The findings showed that AIT results in consumers evaluating a product being studied when touch occurred less favorably and spending less time in-store. However, the literature is silent on empirical insights of the mechanism underlying accidental interpersonal touch. Next, starting with Patterson's (1976) arousal theory of interpersonal intimacy and Thayer's (1989) two-factor arousal theory as the foundation, this research proposes that consumers reduce tense arousal by distancing themselves from where the physical touch occurred, thereby reducing their time in-store.

### **Arousal Labeling Theory of Interpersonal Intimacy**

Arousal labeling theory suggests that changes in an individual's intimacy behavior – such as touching – can produce arousal in another person (Patterson, 1976). Such noticeable arousal change subsequently results in emotion that is positive (e.g., delight) or negative (e.g., anxiety). The former is expected to result in reciprocity behavior (e.g., an increase in eye contact) to maintain or enhance intimacy. The latter – negative emotional labeling – is relevant as it results in compensatory behavior such as physically distancing oneself from another. This is designed to reduce the other person's inappropriate intimacy. If no arousal change results from the other person's behavior, no emotional labeling or behavioral adjustments are required.

Earlier research (Fisher & Byrne, 1975; Middlemist, Knowles, & Matter, 1976) shows that arousal increases when interpersonal distance decreases. In marketing, Sanbonmatsu and Kardes (1988) assert that consumers engaging in everyday activities can provoke arousal in nearby consumers. Arousal labelling theory suggests that a stranger's intimacy behavior that is deemed inappropriate provokes arousal, negative emotion and compensatory behavior, such as leaving a store. The idea that consumers regard a stranger's touch as inappropriate follows research by Hertenstein et al. (2006) which states that the intimacy of touch should match the intimacy of the relationship for it to be considered appropriate.

Shoppers can be assumed to react negatively to touch from a stranger since they have no perceived intimacy with them and will view the behavior as inappropriate. Previous research shows that females' negative shopping satisfaction is related to a lack of personal space (Machleit, Eroglu, & Mantel, 2000). Likewise, males tend to react negatively to touch from strangers (Sussman & Rosenfeld, 1978) although touch from female strangers can be viewed positively (Hertenstein et al., 2006). Thus, while prior research on AIT (Martin, 2012) shows that

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AIT makes males and females distance themselves from strangers who touch them in a store, males should exhibit weaker AIT effects than females when touched by a female stranger.

Following a two-factor approach to arousal – tense and energetic – the current research proposes that consumers respond to AIT by experiencing tense arousal.

### **Two-factor Arousal Theory: Tense arousal and Energetic arousal**

Despite early research treating arousal as unidimensional, Thayer (1989) offers a two-factor approach of tense arousal and energetic arousal. Tense arousal refers to subjective feelings of tension and anxiety (e.g., waiting for a meeting with an irate superior) and energetic arousal to feelings of energy and vigor (e.g., anticipating a night out with friends). Research suggests that tense arousal and energetic arousal produce different attentional processes (Dickman, 2000; Thayer, 1989). Tense arousal concentrates on the threat stimulus as a reaction to a real or imagined threat. Conversely, energetic arousal concentrates attention on the task. Both types are associated with affective states with a negative correlation between the two arousal states at high levels of arousal. Specifically, negative affective states are associated with high tense arousal and low energetic arousal, and positive affective states are associated with low tense arousal and high energetic arousal (Thayer, Newman, & McClain, 1994). This indicates that tense arousal is negatively valenced and energetic arousal is positively valenced making it possible that consumers seek to reduce tense arousal.

Research by Raju and Unnava (2006) show how consumers reduce tense arousal. High brand commitment consumers argue against counter-attitudinal information to reduce tense arousal. This implies that consumers are motivated to reduce tense arousal as they consider it aversive. Prior research indicates that consumers evaluate brands negatively after AIT (Martin, 2012) and

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that arousal takes time to dissipate (Gorn, Pham, & Sin, 2001). Thus it is predicted that consumers misattribute their arousal (Schachter & Singer, 1962) whereby the residual tense arousal from AIT influences their evaluation of a product by influencing the affect felt toward the brand. Consumers in the control condition are unlikely to experience tense arousal as they have not experienced AIT. This discussion leads to the following hypotheses:

- H1:** Consumer evaluation will be less favorable and shopping time will be shorter in response to accidental interpersonal touch than for the no-touch control group.
- H2:** The effect of accidental interpersonal touch on consumer evaluation and shopping time will be mediated by tense arousal rather than energetic arousal.

Hypotheses are tested across three studies. Study 1 investigates whether tense arousal mediates AIT effects. Study 2 examines the role of consumer trait anxiety on AIT effects. Study 3 examines the role of social visibility and whether the presence of bystanders influences AIT effects. Study 3 also investigates the role of embarrassment as a further mediator of AIT effects.

## STUDY 1

### Method

One hundred and sixty one undergraduates (92 males, 69 females) participated in a 2 (AIT: touch, no touch)  $\times$  2 (touch confederate gender: male, female)  $\times$  2 (participant gender: male, female) between-subjects experimental design. Participants were recruited on campus at an English business school and received a chance to win one of four cash prizes of £20 (\$26) as an incentive to participate.



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**Procedure.** Study 1 was conducted at a local store near the university campus which had aisles and wall displays of casual clothing. Participants were tested individually. A trained female or male confederate who showed no gender differences for perceived average physical attractiveness were used for the touch conditions. As the participant studied the target product, the confederate brushed the participant's lower back with the side of their forearm (study 1), or brushed their shoulder (study 2) or upper back (study 3) with their upper arm (i.e., with the part of the arm between the elbow and shoulder). The touch was brief (duration) and light (intensity). Upon recruitment, participants were asked to enter the store, find a hooded sweatshirt display, judge the brand's quality and to return. Upon their return, participants completed a questionnaire.

**Measures.** Brand evaluation was measured on four seven-point scales ("positive/negative," "favorable/ unfavorable," "high quality/low quality," and "good/bad";  $\alpha = 0.92$ ). Tense arousal was measured on five seven-point scales (tense, clutched-up, fearful, jittery, intense; Thayer, 1989;  $\alpha = 0.96$ ). Energetic arousal was measured on five seven-point scales (energetic, vigorous, lively, full of pep, active; Thayer, 1989;  $\alpha = 0.90$ ). Time in-store was measured as the participant entered and exited the store. Store patronage intention was measured on three scales ("likely/unlikely," "definitely would/definitely would not," and "probable/improbable";  $\alpha = 0.97$ ). An exploratory principal axis factor analysis confirmed that evaluation, tense arousal, energetic arousal and patronage intention loaded on single factors (factor loadings  $> 0.71$ , eigenvalues  $> 1$ ). Other measures which were included are not discussed here.

## Results

***Evaluation, In-store shopping time and Patronage Intention.*** A three-way ANOVA found a main effect for touch. The results are reported significant at  $p < 0.05$  level, however considering the in-field experimental nature and sample size of the study we also report marginal significance at the  $p < 0.1$  level (Hair et al., 2010). Touch resulted in less favorable evaluation ( $M_{\text{Touch}} = 4.62$  vs.  $M_{\text{No touch}} = 5.26$ ,  $F(1, 153) = 16.62$ ,  $p < 0.001$ ), shorter shopping time ( $M_{\text{Touch}} = 108.07$  seconds vs.  $M_{\text{No touch}} = 128.85$  sec,  $F(1, 153) = 9.35$ ,  $p < 0.01$ ), but no difference in patronage intention ( $p = 0.93$ ). These results provide some preliminary support for hypothesis 1. In addition, touch confederate gender had a significant main effect for evaluation ( $F(1, 153) = 18.11$ ,  $p < 0.01$ ), a marginally significant effect on time ( $F(1, 153) = 3.45$ ,  $p = 0.07$ ) and a significant effect on patronage intention ( $F(1, 153) = 71.02$ ,  $p < 0.01$ ). These main effects were qualified by a three-way interaction between touch, touch confederate gender and participant gender for time ( $F(1, 153) = 4.65$ ,  $p < 0.05$ ), patronage intention ( $F(1, 153) = 4.90$ ,  $p < 0.05$ ), but not evaluation ( $p = 0.18$ ). We next we ran a series of planned contrasts. For male touchers, a marginally significant touch effect was present for evaluations and patronage intention. Female shoppers who were touched reported marginally significant lower evaluation ( $M_{\text{Touch}} = 4.97$  vs.  $M_{\text{No touch}} = 5.73$ ,  $t(29) = 1.57$ ,  $p = 0.07$ , Figure 2) and marginally significant lower revisit intention ( $M_{\text{Touch}} = 5.65$  vs.  $M_{\text{No touch}} = 6.53$ ,  $t(29) = 1.91$ ,  $p = 0.07$ ). In contrast, male shoppers who were touched showed no difference in evaluation, patronage intentions or shopping time ( $p$ 's  $> .13$ ).

For female touchers, a touch effect was present for evaluations and time but not patronage intention. Female shoppers who were touched reported lower evaluations ( $M_{\text{Touch}} = 3.07$  vs.  $M_{\text{No touch}} = 4.59$ ,  $t(36) = 1.03$ ,  $p < 0.001$ ) and spent less time in the store ( $M_{\text{Touch}} = 72.72$  sec vs.  $M_{\text{No touch}} = 128.85$  sec,  $t(36) = 1.03$ ,  $p < 0.001$ ).

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$t_{\text{touch}} = 125.55 \text{ sec}$ ,  $t(36) = 10.19$ ,  $p < 0.001$ ). Male shoppers who were touched by females revealed a marginally significant effect of spending less time in the store ( $M_{\text{Touch}} = 140.36 \text{ sec}$  vs.  $M_{\text{No touch}} = 160.43 \text{ sec}$ ,  $t(26) = 1.53$ ,  $p = 0.08$ ) but showed no differences in their evaluations or patronage intention ( $p > 0.73$ ).

(Insert Figure 2 about here)

***Mediating Role of Tense arousal and Energetic arousal.*** The prior analysis showed a touch, touch confederate gender and participant gender interaction for time and patronage intention, but not evaluation. To test the mediating role of tense arousal and energetic arousal a bootstrap was run (resampling 1,000 times) to test whether touch, touch confederate gender and participant gender influenced time and patronage intention with tense arousal and energetic arousal as multiple mediators. For shopping time, male touch resulted in tense arousal for male shoppers (indirect effect = -3.52; 95% CI: -10.20, -0.66) but not for female shoppers (CI contained zero). Female touch resulted in tense arousal for male shoppers (indirect effect = -7.92; 95% CI: -18.98, -1.32) and for female shoppers (indirect effect = -10.61; 95% CI: -21.78, -1.45). A similar pattern was evident for patronage intentions (Male touch: male shopper tense arousal, indirect effect = -0.15; CI: -.44, -0.03; female shopper tense arousal, no effect CI contains zero; Female touch: male shopper tense arousal, indirect effect = -0.34; CI: -1.04, -0.03; female shopper tense arousal, indirect effect = -0.46; CI: -0.99, -0.10). In contrast, energetic arousal was not a significant mediator for time or patronage intentions as the bootstrap confidence intervals all contained zero. These results offer support for hypothesis 2.

## Discussion

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Study 1 demonstrates that AIT has a negative influence on evaluation and shopping time. Touch from a female resulted in shorter time for male and female shoppers with this effect stronger for female shoppers. Female shoppers also reported less favorable evaluation when touched. Male touch made female shoppers less likely to revisit the store but this effect was not present for male shoppers. The results show that AIT effects are mediated by tense arousal rather than energetic arousal. Because study 1 shows the interesting result that touch from a female generates a range of AIT effects, studies 2 and 3 explore touch from a female stranger. Given that individual differences have been suggested as useful for explaining arousal effects (Fedorikhin & Patrick, 2010), study 2 examines how individual differences in trait anxiety influence AIT effects.

### STUDY 2

Study 1 shows tense arousal mediates AIT effects. Study 2 extends these findings by using trait anxiety as a moderator. High trait anxiety people could be particularly sensitive to AIT. Research indicates that anxiety is associated with avoidant behavior (Carver & Scheier, 1998) and high trait anxiety people (chronically anxious people) have a heightened awareness to avoid what they perceive to be threatening situations (Matthews & Zeidner, 2004). AIT from a stranger represents a threatening situation for chronically anxious people. Wilhelm and colleagues (2001) in a study of social touching found that chronically anxious people found touch by an experimenter's hand to their wrist to be more unpleasant and they felt more nervous in response to the touch than low anxiety people. The authors also found that highly anxious people avoided social settings involving touch. Hence, high trait anxiety consumers should respond more negatively to AIT than low trait anxiety consumers. Further, high trait anxiety people are more likely to experience tense arousal from AIT. Anxiety is closely related to tense arousal (Hockey

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et al., 2000). High trait anxiety people are more likely to experience feelings of tension and nervousness which are hallmarks of tense arousal (Willis, Dodd, & Palermo, 2013). Thus, high trait anxiety people should be more likely to experience tense arousal when touched by a stranger than low trait anxiety people. Given AIT generates tense arousal (study 1) high trait anxiety people who are touched should experience more tense arousal than low trait anxiety people. A 2 (AIT: touch, no touch) between-subjects design was used with trait anxiety as a measured variable.

In addition, study 2 extends AIT effects to another body area: the shoulder. Research suggests a light touch to the shoulder is viewed more positively than touching the back (study 1). For example, Lee and Guerrero (2001) suggest that an intentional touch to the shoulder is commonly viewed as more appropriate than touching a person's back. Thus, AIT effects may be diminished. One hundred and thirty nine undergraduates (69 males, 70 females) were randomly assigned to a 2 (AIT: touch, no touch) between-subjects experimental design with trait anxiety as a measured variable. Participants received a chance to win one of four cash prizes of £20 (\$26) as an incentive to participate.

### **Method**

***Procedure.*** The procedure was identical to study 1 except that participants were directed to a different store area (stationery products) to evaluate a hardback notebook.

***Measures.*** The measures for study 2 were the same as study 1. Trait anxiety was measured using the Trait Anxiety Inventory (Spielberger et al., 1983). The Trait Anxiety Inventory is a 20 item four point scale (e.g., "I worry too much over something that doesn't matter"; almost never/almost always;  $\alpha = 0.89$ ) that assesses individuals' chronic tendency to experience anxiety

and has been used extensively in psychological research. There were no gender differences in levels of trait anxiety ( $F(1, 136) = 0.00, p = 0.99$ ).

### Results

***Evaluation, Shopping Time and Patronage Intention.*** To assess whether AIT effects are strongest for chronically anxious people, multiple regressions were run using trait anxiety as a continuous predictor variable. Trait anxiety scores were mean-centered ( $M = 1.07, s.d. = 0.44$ ). A regression was conducted for evaluation with the following predictor variables: touch (dummy-coded), gender (dummy-coded), trait anxiety (continuous) and with two-way and three-way interaction variables.

A regression on male and female data showed no main or interactive effects for gender, touch, or trait anxiety for evaluation ( $ps > 0.18$ ) or patronage intention ( $ps > 0.28$ ). However, a regression on shopping time found significant main effects for touch ( $\beta = -0.37, t = -3.48, p = 0.001$ ) and gender ( $\beta = -0.43, t = -4.08, p < 0.001$ ). People who were touched spent less time in the store ( $M_{\text{Touch}} = 59.76$  seconds vs.  $M_{\text{No touch}} = 85.01$  seconds,  $t = 4.35, p < 0.001$ ). Females also spent less time in the store than males ( $M_{\text{Females}} = 58.76$  seconds vs.  $M_{\text{Males}} = 86.04$  seconds,  $t = 4.79, p < 0.001$ ). These results were studied further for females and males respectively.

For female shoppers, a touch, trait anxiety, touch  $\times$  trait anxiety regression for shopping time showed a main effect for touch ( $\beta = -0.37, t = -3.49, p = 0.001$ ) and a significant touch  $\times$  trait anxiety interaction ( $\beta = -0.39, t = -2.91, p < 0.01$ , Figure 3). At one standard deviation above the mean of trait anxiety revealed a significant difference. High trait anxiety females left the store earlier when touched versus when they were not touched ( $\beta = -0.70, t = -4.55, p < 0.001$ ). A similar analysis at one standard deviation below the mean of trait anxiety showed no significant

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difference. Low anxiety females did not leave the store earlier when touched ( $\beta = -0.09$ ,  $t = -0.59$ ,  $p = 0.56$ ). These findings suggest that anxious females are more likely to leave the store earlier after being touched by a stranger. Females showed a similar pattern of results for evaluation (main effect for touch:  $\beta = -0.36$ ,  $t = -3.55$ ,  $p = 0.001$ ; touch  $\times$  trait anxiety interaction:  $\beta = -0.34$ ,  $t = -2.65$ ,  $p = 0.01$ ) but not for patronage intention ( $ps > 0.10$ ). High trait anxiety females rated the notebook less favorably than low trait anxiety females when touched ( $\beta = -0.64$ ,  $t = -4.40$ ,  $p < 0.001$ ). A similar analysis at one standard deviation below the mean of trait anxiety showed no significant difference for touch for low trait anxiety females ( $p = 0.42$ ).

For male shoppers, significant effects were only present for shopping time (Figure 3). A touch  $\times$  trait anxiety regression for shopping time showed a main effect for touch ( $\beta = -0.33$ ,  $t = -2.82$ ,  $p < 0.01$ ). Males spent less time in store when touched ( $M_{\text{Touch}} = 70.76$  seconds vs.  $M_{\text{No touch}} = 100.46$  seconds,  $t = 3.19$ ,  $p < 0.01$ ). There was no significant main effect for trait anxiety ( $p = 0.50$ ) or a touch  $\times$  trait anxiety interaction ( $p = 0.57$ ). These results suggest that trait anxiety offers little predictive insight to how males respond to AIT. Males also showed no touch, trait anxiety, or touch  $\times$  trait anxiety effects for evaluation or patronage intention ( $ps > 0.32$ ). Overall, results for males and females showed a consistent AIT effect for shopping time.

(Insert Figure 3 about here)

**Mediation analysis.** A bootstrap analysis was run testing whether a three-way touch, trait anxiety and gender interaction on shopping time was mediated by tense arousal or energetic arousal. This analysis showed that for males, an average level of trait anxiety resulted in tense arousal driving the effect of touch on shopping time (95% CI: -7.94, -0.40). However it did not mediate the effects for high and low anxiety males. For females, the effect of touch on time was mediated by

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tense arousal for high anxiety females (95% CI: -20.84, -3.62) and average anxiety females (95% CI: -11.92, -0.42) but not low anxiety females. Energetic arousal did not act as a significant mediator in any condition for males or females (all confidence intervals contained zero).

### **Discussion**

Study 2 shows a difference in how females and males respond to AIT. Females show a main effect for touch on evaluation and shopping time. Trait anxiety acts as a moderator with stronger effects for females with higher levels of trait anxiety. In contrast, males show significant results for shopping time only. Males demonstrate an AIT effect by leaving the store earlier when touched but levels of trait anxiety had no influence. Mediation analysis showed that tense arousal rather than energetic arousal mediated the findings for people who experience average levels of anxiety (male shoppers) and average or high levels of anxiety (female shoppers). Study 2 also shows that AIT effects are present for an additional touch area, the shoulder. Study 3 considers an affective response that may offer additional insight into the process driving the AIT effect.

### **STUDY 3**

The prior studies show that AIT results in negative consumer responses where no bystanders are present. However, other shoppers are a common occurrence. Study 3 examines how having bystanders present moderates AIT effects. Having more shoppers in one's vicinity creates higher consumer density in a physical space and can result in consumers experiencing more negative emotions (Argo, Dahl, & Manchanda, 2005). This research proposes AIT in front of a social audience can activate embarrassment.



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Considering the interaction of AIT and social visibility (Fisher & Price, 1992), people who are touched with bystanders present should experience tense arousal and embarrassment.

Embarrassment is a negative emotion that can be experienced in unwanted social situations involving the presence of other people (Miller, 1995). Embarrassment can occur when people fail to conform to social scripts (Parrott & Smith, 1991) and awkward public interactions which violate social norms in front of an audience (Keltner & Buswell, 1997). AIT represents a breach of implicit norms of interpersonal distance between shoppers (Martin, 2012).

People who are touched with bystanders present could experience embarrassment and tense arousal which should result in lower evaluation and shorter shopping time. People who are touched with no bystanders present should feel tense arousal. However as there is no audience present when AIT occurs to make AIT socially visible, these people are less likely to feel embarrassment. Thus people who are touched in front of bystanders should report more negative evaluations and shorter shopping time.

**H3:** Consumers who are touched in the presence of bystanders (vs. no bystanders) will report more negative brand evaluation and shorter in-store shopping time.

The first two studies examined tense arousal as a mediator of AIT effects. This study examines whether AIT influences another negative affective state, embarrassment.

Embarrassment is defined as a negative emotion that results from events that increase the chance of an unwanted evaluation from an audience (Dahl, Manchanda, & Argo, 2001). Research shows that shoppers can experience embarrassment in a retail environment (Brumbaugh & Rosa, 2009) and that embarrassment can result in distancing behavior from a stressful situation (Maltby &

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Day, 2000). Importantly, embarrassment can result from inappropriate public behavior by other people (Bagozzi, Gopinath, & Nyer, 1999). Embarrassment often occurs after some disruption in social interactions or when people fail to act in accordance with socially defined scripts (Parrott & Smith, 1991). The present research proposes that AIT from a stranger in a store breaches the implicit rules of conduct between customers in retail settings (Martin, 2012). Touch should have an interactive effect with social visibility (bystanders) on embarrassment where the presence of bystanders will increase the potential for embarrassment from AIT.

An important aspect of embarrassment is its social component. Embarrassment occurs in front of a real or imagined audience which depends on a person's appraisal of others' evaluations (Keltner & Buswell, 1997). Embarrassment is a social emotion which increases impression management motivation (Leary & Kowalski, 1990), and which is experienced to a greater degree in front of strangers (MacDonald & Davies 1983). Bystanders represent a social audience for AIT that should lead to more embarrassment than in private (no bystander) conditions. A main effect for bystanders on embarrassment is unlikely because touch is required to trigger embarrassment. That embarrassment - which is an emotion which occurs in a public setting and which involves an undesired evaluation from others - should be greater when a public audience (i.e., bystanders) is present.

Embarrassment is a discrete emotion distinct from tense arousal. Although both represent forms of negative affect (Wilt, Funkhouser & Revelle, 2011), tense arousal involves a threat motivation which is activated in response to AIT. In contrast, embarrassment involves a social evaluation (Miller, 1995). Bystanders make AIT socially visible which increases the chance of embarrassment when a consumer is touched. Consequently tense arousal and embarrassment should mediate consumer responses to AIT.

**H4:** Embarrassment and tense arousal will mediate the effect of accidental interpersonal touch and social visibility on consumer evaluation and shopping time.

Study 3 includes another dependent variable (willingness to pay) and extends research to a different touch area (upper back). One hundred and forty two undergraduates (44 males, 98 females) were randomly assigned to a 2 (AIT: touch, no touch)  $\times$  2 (social visibility: no bystanders, bystanders) between-subjects experimental design. Participants received a chance to win one of four cash prizes of £20 (\$26) as an incentive to participate.

### Method

**Procedure.** The procedure was identical to study 2 except that participants examined a new product, a small fashionable back pack. For the social visibility condition, two female postgraduate confederates (pretested for moderate physical attractiveness) acted as bystanders. Unlike the touch confederate who approached from a blind spot and was unseen by the participant, bystanders stood within two feet, either side of the participant. Bystanders ostensibly browsed other products and did not interact with the participant or each other but were close enough so that AIT would be witnessed by them.

**Measures.** Willingness to pay (WTP) was an open-ended measure of the amount in pounds (£) participants would be willing to pay for this product. Aisle crowding was measured on four seven-point scales (“crowded/uncrowded,” “restricted/free to move,” “confined/spacious,” and “cramped/not cramped”;  $\alpha = 0.77$ ) from Hui and Bateson (1991). Embarrassment was measured on three items (embarrassed, uncomfortable, awkward,  $\alpha = 0.95$ ). Other measures were identical to study 2.

**Manipulation check.** For social visibility, an ANOVA with social visibility as the independent variable and an open-ended measure of the number of people in the aisle as the dependent variable revealed that bystanders resulted in perceptions that the aisle contained more people than conditions with no bystanders ( $M_{\text{Bystanders}} = 1.83$  people,  $M_{\text{No bystanders}} = 0.43$  people,  $F(1, 140) = 72.33, p < 0.001$ ). An ANOVA on the aisle crowding index revealed a main effect of social visibility ( $F(1, 140) = 17.12, p < 0.001$ ). Participants in the bystander (vs. no bystanders) condition reported more crowding ( $M_{\text{Bystanders}} = 4.65, M_{\text{No bystanders}} = 3.82$ ). Thus, social visibility appears to have been successfully manipulated.

**Shopping Time, Evaluation and WTP.** A touch  $\times$  gender  $\times$  social visibility ANOVA found a significant main effect for touch on shopping time ( $M_{\text{Touch}} = 59.18$  seconds,  $M_{\text{No touch}} = 71.71$  seconds,  $F(1, 134) = 10.70, p = 0.001$ ). A main effect for gender showed female shoppers spent more time in store than males ( $M_{\text{Males}} = 51.63$  seconds,  $M_{\text{Females}} = 79.27$  seconds,  $F(1, 134) = 52.02, p < 0.001$ ), but there was no main effect for social visibility ( $p = 0.53$ ). However, a gender  $\times$  touch  $\times$  social visibility interaction was present for shopping time ( $F(1, 134) = 11.08, p = 0.001$ ). Follow-up planned contrasts of the interaction showed that female shoppers who were touched in front of bystanders spent less time in the store ( $M = 53.26$  seconds) than those who were touched with no bystanders present ( $M = 75.98$  seconds,  $t(46) = 4.24, p < 0.001$ ). Similar results existed for evaluation and WTP (evaluation:  $M_{\text{Bystanders}} = 2.74, M_{\text{No bystanders}} = 3.77, t(46) = 3.77, p < 0.001$ ; WTP:  $M_{\text{Bystanders}} = \text{£}12.30, M_{\text{No bystanders}} = \text{£}16.89, t(46) = 3.29, p < 0.01$ ). These findings support hypothesis 3.

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For evaluation, there was a significant main effect for touch on evaluation ( $M_{\text{Touch}} = 3.73$ ,  $M_{\text{No touch}} = 4.54$ ,  $F(1, 134) = 47.88$ ,  $p < 0.001$ ). There was no main effect for gender ( $p = 0.41$ ). A main effect for social visibility showed bystanders resulted in less favorable evaluation than when no bystanders were present ( $M_{\text{Bystanders}} = 3.81$ ,  $M_{\text{No bystanders}} = 4.26$ ,  $F(1, 134) = 6.78$ ,  $p = 0.01$ ). The three-way interaction for evaluation was not significant ( $p = 0.76$ ). For WTP, a main effect was touch was present ( $M_{\text{Touch}} = £17.56$ ,  $M_{\text{No touch}} = £21.97$ ,  $F(1, 134) = 16.05$ ,  $p < 0.001$ ). However no main effect for gender or social visibility was evident ( $p$ 's  $> 0.14$ ). The three-way interaction for WTP was not significant ( $p = 0.80$ ).

For male shoppers, males who were touched by a female in front of bystanders stayed in the store longer than males who were not touched ( $M_{\text{Touch}} = 68.60$  seconds,  $M_{\text{No touch}} = 45.71$  seconds,  $t(12) = 3.93$ ,  $p < 0.01$ ). No main effects for touch, social visibility or a touch  $\times$  social visibility interaction were significant for WTP ( $p$ 's  $> 0.58$ ). These findings do not support hypothesis 3.

**Mediation Analysis.** For females, a bootstrap of the touch  $\times$  social visibility interaction which included tense arousal, energetic arousal and the affect measures as potential mediators showed that embarrassment mediated the touch  $\times$  social visibility effects for shopping time (95% CI: -10.27, -0.61) and evaluation (95% CI: -0.56, -0.02). A touch  $\times$  social visibility ANOVA on embarrassment showed main effects for touch ( $M_{\text{Touch}} = 5.02$ ,  $M_{\text{No touch}} = 3.00$ ,  $F(1, 94) = 75.37$ ,  $p < 0.001$ ), social visibility ( $M_{\text{Bystanders}} = 4.25$ ,  $M_{\text{No bystanders}} = 3.77$ ,  $F(1, 94) = 4.13$ ,  $p < 0.05$ ) and a significant touch  $\times$  social visibility interaction ( $F(1, 94) = 4.13$ ,  $p < 0.05$ ). When bystanders are present, females experience quite strong embarrassment from touch ( $M_{\text{Touch}} = 5.49$ ,  $M_{\text{No touch}} = 3.00$ ,  $F(1, 45) = 58.91$ ,  $p < 0.001$ ). This embarrassment mediates the effect of touch on shopping

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time (95% CI: -21.25, -3.47) and evaluation (95% CI: -1.16, -0.22). When bystanders are absent, females experience embarrassment from touch but to a lesser extent ( $M_{\text{Touch}} = 4.55$ ,  $M_{\text{No touch}} = 3.00$ ,  $F(1, 49) = 21.77$ ,  $p < 0.001$ ), although embarrassment still mediates the effect of touch on shopping time (95% CI: -15.24, -1.89) and evaluation (95% CI: -0.83, -0.13). However, in contrast to the prior studies, tense arousal does not mediate the effect of touch on females in the no bystander condition (confidence intervals across the dependent measures contain zero).

For males, a bootstrap of the touch  $\times$  social visibility interaction showed that tense arousal mediated shopping time when touch occurred with no bystanders present (95% CI: 1.07, 24.14), but that tense arousal did not affect males when touch occurred with bystanders present (95% CI: -0.58, 26.91). Energetic arousal was not a significant mediator. Bootstraps for evaluation and WTP showed no significant mediators.

## Discussion

Study 3 examined how social visibility (i.e., having bystanders) influences AIT effects. Females showed stronger AIT effects when bystanders were present for shopping time, evaluation and willingness to pay. Mediation analysis showed that female AIT responses are mediated by embarrassment rather than tense arousal, energetic arousal or other affect measures. Males again show a main AIT effect for evaluation and an interaction for shopping time. When female bystanders are present, female touch results in males staying in the store longer than when not touched. Mediation analysis shows that male responses are mediated by tense arousal.

## GENERAL DISCUSSION

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This research examines the process underlying accidental interpersonal touch (AIT) effects on consumer judgments and shopping time across three field studies. Study 1 found that shoppers who are accidentally touched by a stranger evaluate brands more negatively and leave the store earlier than people who are not touched. These AIT effects are driven by tense arousal not energetic arousal. Study 2 showed that AIT effects are especially negative for high trait-anxiety female shoppers. For male shoppers, AIT only influences shopping time. AIT effects for males and females are again driven by tense arousal. Study 3 again showed stronger AIT effects for female consumers than for male consumers when they are touched by a female. AIT effects are amplified when bystanders are present in a store but in different ways. Females respond more negatively to AIT when bystanders are present. They stay in the store for less time and report lower evaluation and WTP. However touched males stay in the store longer when bystanders are present. These effects are mediated by embarrassment for females and tense arousal for males.

### **Theoretical Implications**

The current research contributes to the literature in several ways. First, this is the first research to illuminate the psychological mechanism that underlies the AIT effect. Prior work (Martin, 2012) has shown a main effect for AIT but no research has tested what process underlies this effect.

The authors show that arousal is the driving factor for shopper behavior. Specifically, the activation of tense arousal is what drives consumers to leave a store when they experience AIT.

It is not the positive feeling of energetic arousal, it is a negative experience which results in consumers leaving the store. This research also shows that female consumers appear to be more prone to this tense response than male consumers. Although prior research (Martin, 2012) suggests male strangers result in more negative AIT effects, this research shows that AIT from

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female strangers can generate a strong negative response from female shoppers. Thus, the AIT effect should not be construed as a response restricted to the actions of male consumers.

The current research also shows that a two-factor approach to arousal offers useful insights to research on in-store behavior. For example, Yalch and Spangenberg (2000) suggest that increasing consumer arousal results in consumers spending more time in-store. However their arousal measure did not contain items relating to tense arousal and appeared to relate to energetic arousal. In contrast, energetic arousal does not drive AIT effects and increasing tense arousal reduces shopping time. The present research contributes by showing the role of tense arousal on in-store shopper behavior and demonstrates the powerful effect that touch from other consumers in a retail environment can have on the shopping experience.

Second, the current research is the first to examine moderators of the AIT effect related to consumer individual differences (trait anxiety) and the retail environment (social visibility and bystanders). Regarding trait anxiety, this research shows that female consumers who chronically experience an average to high level of social anxiety feel tense arousal from AIT. Yet male and female consumers who tend not to chronically experience anxiety in their day-to-day lives do not report feeling tense arousal from AIT. These results reaffirm that tension appears to be central to the AIT response which is particularly evident for consumers who are predisposed to a negative interpretation of situational events (i.e., touch is viewed as negative). Trait anxiety is relatively unstudied in consumer research compared to psychology which is surprising given that the behavioral effects of anxiety include social withdrawal and distancing behavior which could be relevant to understanding many consumer situations.

Regarding social visibility, prior AIT research has tested the effects in isolation without controlling for the number of consumers in the aisle when AIT happens. The results from study 3



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show that when bystanders are present, AIT effects are evident. A new finding from this research is that when AIT is socially visible to bystanders then consumers can experience embarrassment. This result is consistent with work on embarrassment as an emotion which requires a perceived social audience (Keltner & Buswell, 1997). Yet embarrassment from AIT is less relevant to males than females. The current research also adds to the literature on shopper embarrassment. Rather than shopper embarrassment in response to the actions of a service provider (Brumbaugh & Rosa, 2009), the findings show how embarrassment can be generated from other shoppers.

Third, the authors demonstrate the robustness of the AIT effect based on three field experiments. Specifically, we show how the AIT effect is present for touch to different areas of the consumer's body (lower back, study 1; shoulder, study 2; upper back, study 3), a new dependent variable (store patronage intention) and new products ranging from fashionable (hooded sweatshirt, study 1; back pack, study 3) to utilitarian (hardback notebook, study 2) products.

### **Managerial Implications**

The results highlight the need for retailers to be aware of the potential for other consumers to negatively impact a consumer's shopping experience through accidental touch, thereby reducing their shopping time. Retailers can monitor levels of AIT using recordings from video security cameras to monitor shopper foot traffic and from employee feedback. Managers should also be aware how females and males differ in their response to AIT when bystanders are present. Females respond negatively to AIT in the presence of bystanders, suggesting a need for others to respect their personal space. In contrast, touched males stay longer in the store when bystanders are present compared to AIT when no bystanders are present. For managers, this suggests that

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store design (e.g., a section selling female clothing) should reflect an awareness of the need for personal space.

Of importance to managers is that AIT from other customers results in tense arousal. This finding is contrary to the view (Falk, 2003) that in-store activities can draw crowds which create shopper excitement (energetic arousal). Energetic arousal plays no role in AIT effects. Instead tense arousal drives consumer responses. Managers should realize that when consumers leave the store from AIT it is driven by tension not by feelings of excitement. In addition, managers should note that females also experience embarrassment from AIT particularly when bystanders are present.

### **Limitations and Future Research**

A limitation of the research from using field experiments is perceived density caused by other consumers in the store. Although the authors ran the studies in non-peak trading times and used product aisles away from the main traffic flow areas in the store, the influence of background consumers may have been an issue. In addition, only female bystanders were used for study 3 which may explain why male consumers stayed in the store longer when touched (i.e., they liked having females in close proximity). Male responses were not mediated by embarrassment. Future research should examine how male consumers respond to male bystanders when AIT occurs. Results from the current research are the first to show that AIT does not always result in shorter shopping times. Males stay longer in the store after AIT when bystanders are present. Future research could explore the reasons for this effect. The results suggest males do not experience a strong negative or positive affective response to AIT when bystanders are present. Thus, touch in such instances may be discounted by males as a possible occurrence in a more crowded setting.

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On the other hand, given male concerns of how males view them (Martin & Gnoth, 2009), male bystanders may generate more concern about negative social evaluation thereby generating embarrassment.

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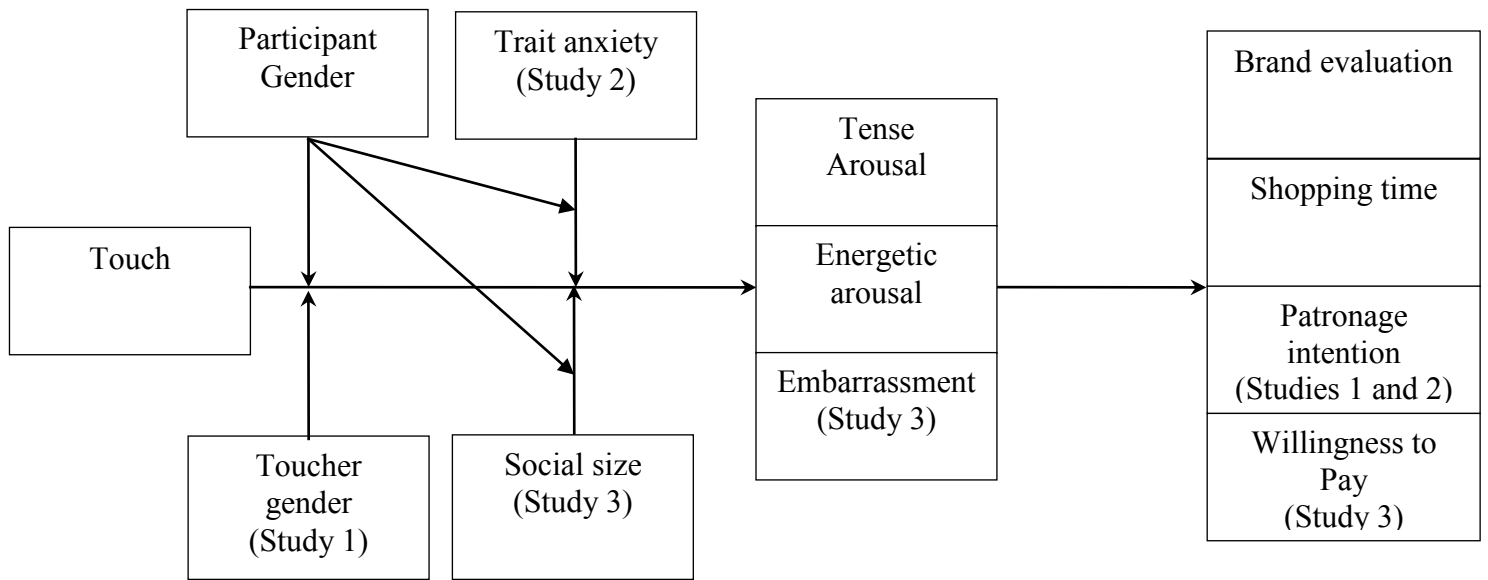


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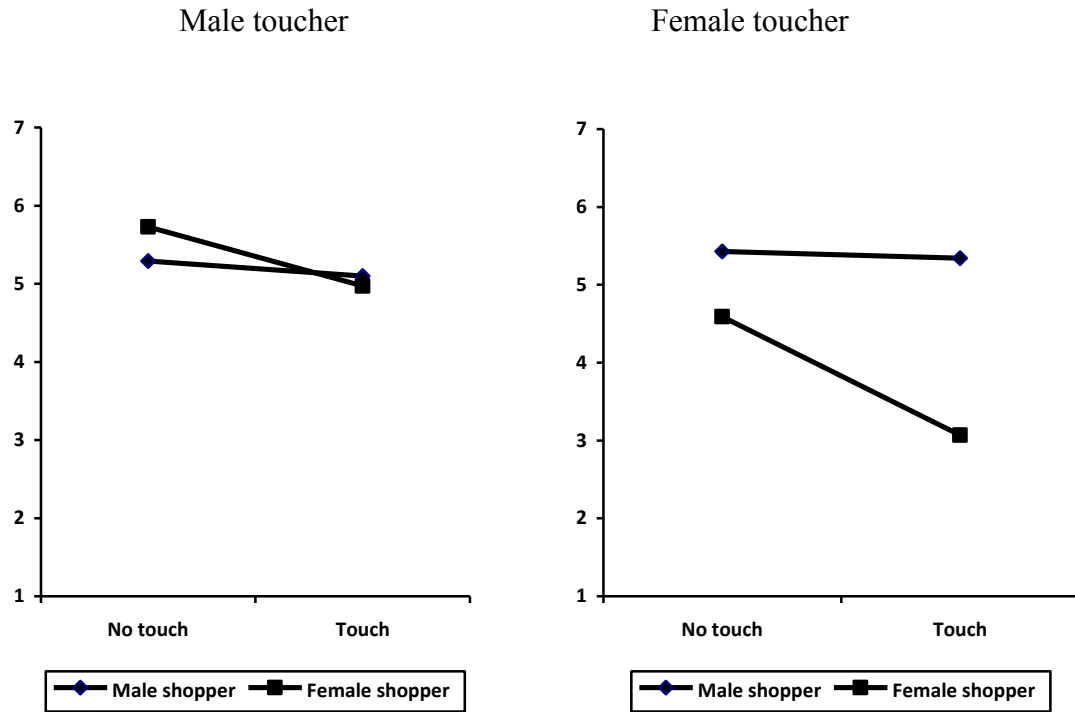
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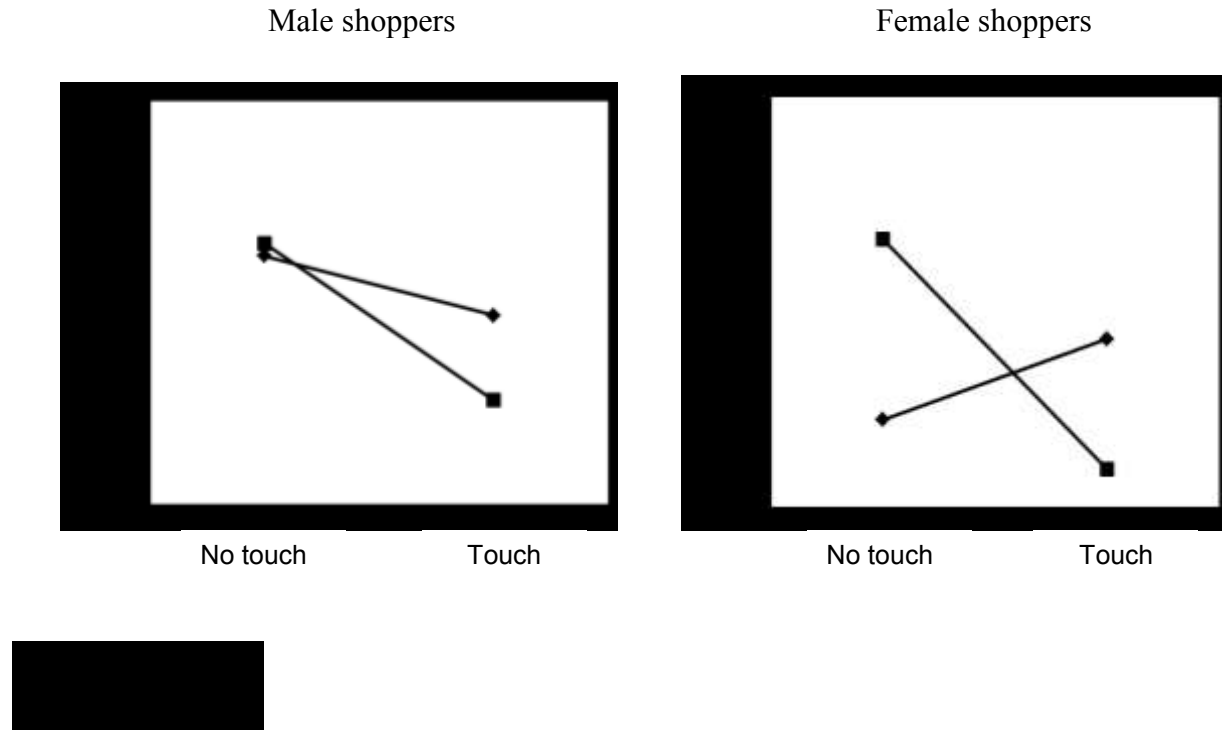
**Figure 1.** Conceptual model.

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**Figure 2.** Study 1: Effects of touch and participant gender on evaluations by male and female toucher conditions.

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**Figure 3.** Study 2: Effects of touch and trait anxiety on shopping time for male and female shoppers.